

The development of computer-aided-instructional (CAI) programs in medicine occurs within the general framework of the emerging field of medical informatics. This field is concerned with organizing and managing information by technology to support patient care, education, research, and administration. Technology-based educational initiatives can form the basis for computer-mediated-instruction (CMI) which is a faculty-guided, learner-centered approach to learning that takes advantage of the strength of the instructor, learner, and multimedia technology to create a personalized learning environment to increase student academic achievement. CMI preserves the core elements of traditional instruction and introduces the new element of CAI. CMI gives students better access to more learning resources, when they need it, and at the level which they require.

It appears that many programs fail to achieve their intended objectives because of one or more of the following factors: (a) narrowly conceptualized, (b) limited in scope, (c) theoretically chaotic, (d) pedagogically confusing, and (e) non-transformative (i.e, a simple transformation of traditional teaching methods and material without taking advantage of the added enhancing features of multimedia authoring).

The teaching of medical physics principles is generally directed at medical and physics students, residents, technologists, and physicians. The principles of adult education should form the theoretical framework for technology-based programs directed at these populations. One of the criteria of adult education is that of self-directed learning. CAI programs are ideally suited to the principle of self-directed learning.

Many CAI programs are being developed without adequate formative evaluation. Formative evaluation (i.e, a rigid process to obtain feedback, both quantitative and qualitative, from learners and experts during development of the program) are essential, and again conforms to two principles of adult education : “adults learn best if they are involved in the planning of their educational experience” and “feedback is a critical component”.

This presentation will demonstrate some of these educational principles in CAI programs which the author has developed.

Educational Objectives

1. Discuss the importance of sound educational criteria in developing electronic educational programs.
2. Demonstrate the value of formative evaluation processes during program development.